Abstracts

Doppler Signal Detection with Negative-Resistance Diode Oscillators

Y. Takayama. "Doppler Signal Detection with Negative-Resistance Diode Oscillators." 1973 Transactions on Microwave Theory and Techniques 21.2 (Feb. 1973 [T-MTT]): 89-94.

A theory is presented for the Doppler signal detection with a negative-resistance diode oscillator operating simultaneously as a signal source and Doppler signal detector. The theory is based on a realistic model of the oscillator, including an object passing in front of an antenna, and includes the previous treatments as the limiting cases. The effect of the bias circuit taking out the Doppler signal on the RF operation of the oscillator is taken into account self-consistently. The frequency down-conversion with a free-running oscillator is also investigated. Conversion gain is demonstrated by the experiment using a Gunn oscillator with a movable load.

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